



## **Modified, threshold-based circulation type classification for Europe**

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There are many classifications of atmospheric circulation types. One of the well-known European circulation type classification is the Polish one, developed originally by J. Lityński in 1968, which is based on three indicators: zonal index  $W_s$ , meridional  $W_p$  and circulation type  $C_p$ . The presented here Lityński-based, modified circulation type classification is – just as the original one – a threshold-based method, which means that the borderlines between particular types are adopted arbitrarily, with 27 predefined types. The novelty of this classification is its ‘equal-probability’, as it allows to obtain a catalog of circulation types, in which the division of the distribution of the  $W_s$ ,  $W_p$  and  $C_p$  indicators into three classes is more similar to the one of equal-probability (i.e. the relative frequency of each class is the closest to 33.33%).

Each synoptic situation is then clearly classified so there are no unclassified or transitional situations. Thanks to such approach, the catalog of types is easy to use especially when preparing some comparative analyses. Big advantage of this classification algorithm is also its relative simplicity, in contrary to methods using principal component analysis or optimization methods. However, the computing time or complexity of the algorithm are no longer a problem, but still having the easier method one can also easier understand what is exactly being produced by the classifying algorithm.

Feel free to download the algorithm (written in MATLAB), which generates circulation types according to the developed method in any place in the European middle latitudes!